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## From Sri Lanka to Nepal: Reaching New Heights in Micro-Hydro Power Generation

***USAID/US-AEP helps transfer best practices from Sri Lanka to Nepal***



**“The trip had important consequences for the Nepalese delegation. We gained confidence that projects could be built at reasonable costs with long penstocks to provide attractive rates of return on investment. On seeing long penstocks in use in Sri Lanka, the power producers re-examined this option and looked at their feasibility studies in this new light.”**

**Bikash Pandey, Project Manager, Winrock International, Nepal**

### Challenge

Nepal has a long history of home grown mini-and micro-hydro systems that have been continually tweaked and improved. Some factors limiting the growth of the Nepalese micro-hydro sector were that they had little experience with independent power supply systems, selling power to the national grid and securing private investment; and a technical uncertainty and lack of confidence amongst developers to build long penstocks on rugged terrain.

### Initiative

Like Nepal, Sri Lanka too relies heavily on water for power generation, but unlike Nepal, independent power producers have supplied the Ceylon Electricity Board (CEB), the national utility, since 1996. The independent producers had substantial experience in negotiating power purchase agreements, achieving financial closure, and sourcing equipment and building power plants.

Based on this experience, Sri Lanka was well-placed to assist Nepal. The USAID/ US-AEP program and Winrock International in Kathmandu, Nepal, designed a program for five power sector professionals to gain from Sri Lanka's experience.

During a visit to Sri Lanka several years ago, the Nepal delegation was able to see firsthand and discuss the pros and cons of building and maintaining long penstocks. Two leading Sri Lankan mini-hydro developers, Dr. Nalin Walpita (Zyrex) and Dr. Romesh Bandaranayake (Eco Power) assisted the visitors with information, field visits and technical inputs. CEB's Private Power Division provided details on schemes to sell private power to the grid and to communities, while the Board of Investment assisted with details on private investment mechanisms and incentives to attract capital.

The delegation also studied financial mechanisms used in Sri Lanka to promote renewable energy technologies such as the Renewable Energy for Rural Economic Development program supported by the World Bank and Global Environmental Facility and the NGO-based rural level micro- finance scheme implemented by Sarvodaya Economic Enterprise Development Services.

### Results

Upon their return, a number of mini-hydro developers took up the challenge to construct mini-hydro projects with long penstocks that included the 3 MW Puluwa Khola project that uses a 3.5 kilometer penstock with a 1.6 meter diameter. The owner attributes the success of his project to the decision he made to build a long penstock following his visit to Sri Lanka. The alternative would have been a long open canal constantly susceptible to landslides, seepage, and evaporation of water.

Six years after the visit to Sri Lanka, two mini/small hydro power projects supply power to the main grid, while four projects are under construction, 10 projects have private power purchase agreements and another 20 projects have completed feasibility studies.